

WHAT IS CLAIMED IS:

1. A device for the automatic opening and closing of reaction vessels, comprising:
holding device for the non-rotatable holding of one or more reaction vessels;
a gripper for the gripping of a lid for the reaction vessel, wherein the gripper has
gripping jaws effective to take hold of the lid, and the gripper has no active
operating device for opening and closing the gripping jaws, and
a rotating mechanism for rotatable holding of the gripper; wherein
the gripping jaws are arranged so that, when the lid is inserted into the area
between the gripping jaws, it is held by the gripping jaws through frictional contact.
2. The device according to claim 1, wherein the gripping jaws have insertion slopes.
3. The device according to claim 1, wherein the gripping jaws have on their gripping
surfaces one or more cutting webs running at right-angles to the direction of rotation.
4. The device according to claim 3, wherein the height by which the cutting web
projects beyond the gripping surface is less than the wall thickness of the reaction vessels.
5. The device according to claim 1, wherein the holding device has a clamping
mechanism to clamp and hold the reaction vessels.
6. A device for the automatic opening and closing of reaction vessels according to
claim 1, comprising:
a holding device for the non-rotatable holding of one or more reaction vessels; a
gripper for the gripping of a lid for the reaction vessel, wherein the gripper has
gripping jaws effective to take hold of the lid; and
a rotating mechanism, for rotatable holding of the gripper; wherein
the holding device has three perforated plates, arranged one above the other, each
of the perforated plates having the plurality of openings to hold the reaction vessels,
wherein the top and bottom perforated plates are arranged so as to be stationary,
with the openings in the top and bottom perforated plates being flush with one
another, and the middle perforated plate is capable of sliding between a first

position in which ~~its~~ the openings in the middle perforated plate are aligned with the openings of the top and bottom perforated plates, and a second position in which ~~its~~ the openings are arranged somewhat offset relative to the openings of the top and bottom perforated plates, so that a reaction vessel inserted in the openings of the perforated plates is immobilized, and
-means for fixing the middle perforated plate in the second position.

7. The device according to claim 6, wherein the middle perforated plate is mounted so as to slide in a single direction of sliding.
8. The device according to claim 7, wherein the openings in the direction of sliding are wider than those at right-angles to the direction of sliding.
9. The device according to claim 7, wherein the middle perforated plate contains a plurality of projections each extending into the interior of an opening each projection being located in the section area between a centre line of the opening running in the direction of sliding, and the edge of the opening.
10. The device according to claim 9, wherein the top and/or bottom perforated plate contains a plurality of projections each extending into the interior of an opening and is arranged opposite the projection of the corresponding opening of the middle perforated plate.
11. The device according to claim 6, further comprising means for moving and fixing the middle perforated plate in the second position.
12. A robot, comprising:
 - a work platform;
 - one or more handling arms; and
 - a device according claim 1, wherein one handling arm is provided with the rotating mechanism for rotatable holding of the gripper.
13. The robot according to claim 11, further comprising a mount on a work platform for non-rotatable mounting of the holding device.